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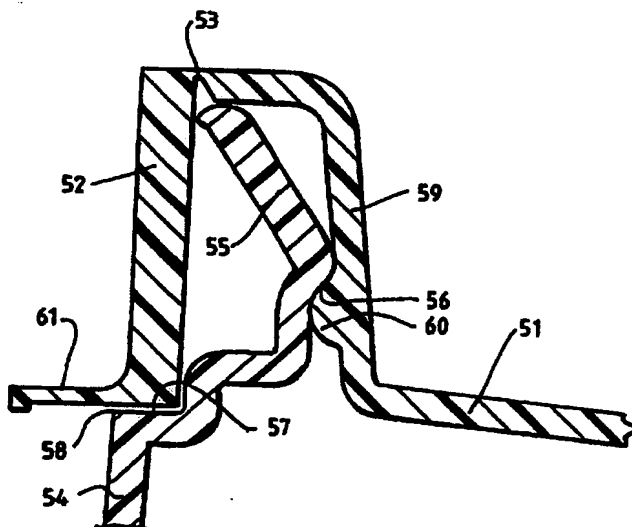
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(54) Title: TAMPER PROOF CLOSURE



(57) Abstract

A closure of plastics material for a container (54) is disclosed. The closure includes a cup-shaped portion (51) for seating within a neck (81) of a container (54) for sealing the container and a depending sleeve portion (52) which is frangibly connected to the cup-shaped portion (51) at its upper rim surface as shown at (53). An upstanding annular wall (59) of cup-shaped portion (51) and depending sleeve portion (52) define a space for resilient receipt of the neck (81) of container (54). Wall (59) includes on its external surface a bead (60) which, in the assembled position of the closure on a container, seats within the internal undercut (56) which, in conjunction with bead (60) provide for a sealing engagement between the closure and a container.

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TAMPER PROOF CLOSURE

This invention relates to a closure for a container and is particularly directed to a closure of resilient plastics material having one or more features which render it difficult to remove or open the closure in other than a normal manner. Closures according to the invention may also include features that afford visual evidence that a closure has been opened. Closures of the type with which the invention is concerned are usually known as tamper proof closures. The invention also encompasses a closure and a container when assembled together.

A closure according to the invention may be used to seal containers for foodstuffs and beverages wherein consumers can rest assured that a given container has not previously been opened by any other person. In a particular application, the closures may be used for sealing containers made of a plastics material, for example of 830 ml. capacity and containing milk or liquid fruit juices.

According to a first aspect, the invention provides a closure of plastics material for a container, the closure including a sleeve for surrounding the neck of the container, the sleeve including a locking means for engaging a portion of the neck of the container, the locking means being hingedly connected to the sleeve, and movable to a locking position which effectively prevents separation of the sleeve from a neck of the container on assembly of the closure to the container.

The invention encompasses the use of a single locking means or plural locking means. Preferably the locking means is (are) movable to its (their) locking position by physical contact between the locking means and

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a portion of the neck of a container which occurs during the assembly of the closure onto a container.

5 Preferably the locking means comprises an annulus having a conical form such that it depends inwardly and downwardly from the sleeve prior to the assembly or fitting of a closure according to the invention to a container. Alternatively the locking means may comprise a plurality of lugs that depend inwardly and downwardly from the sleeve.

10 A container for use with the invention will have a neck that is adapted to cooperate with the locking means. Thus, the container neck may include a ledge which contacts the free end of the above described annulus (or free ends of the lugs) whereby such contact and the relative linear movement between a closure and container as they are being
15 assembled rotates the annulus (or lugs) about the hinge connection into a locking position. Preferably the container neck also includes an "undercut" abutment (which may be provided by a junction between an inwardly extending ledge and a wall of the container) such that a locking
20 means, such as in the form of an annulus, can extend upwardly from the sleeve such that a free end face seats under the abutment so as to prevent separation of the sleeve from the container under normal conditions of use.

25 Thus a closure having a locking means according to the invention provides a tamper evident closure insofar as the difficulty of removing the closure from a container means that any such removal is only possible by breaking or damaging the locking means as will render the locking means of no effect if the sleeve is replaced onto the container.

30 The first aspect of the invention also includes an assembled closure and container.

35 Preferably a closure according to the invention also includes a container sealing diaphragm attached to the sleeve by a frangible connection, the diaphragm being removable upon breaking the frangible connection to open the container. The diaphragm may include a means, such as a pull ring of relatively large diameter, for breaking the

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frangible connection.

A closure as above described may comprise a one piece integrally moulded construction.

5 Preferably a closure according to the invention also includes a cover cap for snap-on engagement with the sleeve.

10 Preferably the sleeve is adapted to provide an upper sealing position and a lower sealing position thereon for the snap-on cover cap. The cover cap may also be made of plastics material and moulded as a separate piece.

15 Preferably, in a closure according to the invention, the diaphragm and the means for breaking the frangible connection pull ring are shaped such that, when intact with the sleeve, they allow the snap-on cover cap to engage with the sleeve in the upper sealing position only. When the container is unsealed, that is when the diaphragm has been removed, it may be resealed by replacing the cover cap over the sleeve until it snaps into the lower sealing position thereon. Thus, according to the invention, the position of the cover cap affords an indication of whether the sealing diaphragm of the closure has been removed. That is, if the diaphragm has not been removed, the cover cap can only be in its upper position, whereas if the diaphragm has been removed, the cover cap will reseal the container only when it is snapped on into its lower position. This feature of the invention affords an indication that the closure may have been tampered with by way of removal of the diaphragm seal.

25 30 Preferably the sleeve provides a "no-drip" pouring rim for the container.

35 In another aspect of the invention there is provided a closure of plastics material for a container, the closure including a cup shaped portion for seating within the neck of a container for sealing the container, and a sleeve portion frangibly connected to the cup-shaped portion whereby when the closure is assembled on the container, the sleeve portion surrounds the neck of the

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container externally of the container and effectively cannot be removed therefrom without breaking the frangible connection.

5 Preferably the cup-shaped portion seals the container by virtue of a snap fit engagement between the two. A circumferential bead on the external surface of an upstanding wall of the cup-shaped portion, which is for engaging an internal undercut portion of the neck of a container, may be provided to establish the snap fit
10 engagement.

The container may also include a shoulder on which the bottom edge surface of the sleeve portion seats when a closure is assembled on the container. This feature renders it difficult to access the bottom edge of the
15 sleeve, for example in an attempt to prise the closure off a container without breaking the frangible connection.

Preferably the sleeve portion includes a lug for use in a normal opening operation for the closure. Thus, the lug may be used as a lever to force the sleeve portion
20 outwardly and upwardly of the container by finger pressure to break the frangible connection and thus allow removal of the cup-shaped portion from the container. Preferably only a portion of the connection between the cup-shaped portion and sleeve portion is made frangible such that the sleeve
25 portion will remain attached to the cup-shaped portion and act as a pull ring therefor to facilitate removal of the sealing cup-shaped portion on opening the container.

The frangible connection between the cup-shaped portion and the sleeve portion may be located adjacent an
30 upper rim of the cup-shaped portion. Alternatively, the frangible connection may be located in proximity to the upper rim but spaced therefrom such that the cup-shaped portion includes an annular rim, of inverted U-shape in cross section, which seats over the rim of the neck opening
35 of the container.

It will be appreciated that the second aspect of the invention provides for a moulded one piece closure

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construction that is tamper proof to the extent that access to the closure for opening the container in other than a normal way is rendered very difficult and in any event will be evidenced by a breaking of the frangible connection between the cup-shaped portion and the sleeve portion. The cup-shaped portion and the surrounding sleeve portion in combination, in use of the closure, ensure that the seal between the cup-shaped portion and a container cannot be broken without first breaking the frangible connection between the cup-shaped portion and the sleeve portion.

The invention in its second aspect includes the assembly of a closure and a container.

It will also be appreciated that the cup-shaped portion may be used to reclose a container, such reclosure being evident from the broken status of the connection between the cup-shaped and sleeve portions.

Embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings. The specific form and arrangement of the various features in the drawings is not to be understood as limiting on the invention.

In the drawings:

FIGURE 1 is a diagrammatic sectional view of portion of a closure, according to an embodiment of the first aspect of the invention, in place on the neck of a container;

FIGURE 2 shows a closure and cover cap according to an embodiment of the first aspect of the invention;

FIGURE 3A shows the position of a cover cap of a closure as shown in Figure 2 prior to an initial unsealing of the closure;

FIGURE 3B shows the position of the cover cap of Figure 3A in its resealing position;

FIGURE 4 is a diagrammatic sectional view of portion of a closure, according to an embodiment of the second aspect of the invention, in place on the neck of a container;

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FIGURE 5 shows a closure according to an alternative embodiment (as shown in Figure 7) of the second aspect of the invention;

5 FIGURE 6A shows a closure as in Figure 5 assembled on a container;

FIGURE 6B is a view similar to Figure 6A illustrating a closure that has been tampered with;

10 FIGURE 7 is a view similar to Figure 4 showing an alternative embodiment of the second aspect of the invention; and

FIGURE 8 illustrates a modified form of the embodiment illustrated in Figure 1.

15 As is indicated above, the drawings illustrate embodiments of closures in accordance with first and second aspects of the invention.

20 A closure according to the invention in its first aspect as shown in Figure 1 includes a first part 1 and a separate second part 2, both of which are moulded from a resilient plastics material. The first part 1 includes a sleeve 4 for surrounding the neck 5 of a container 6, which may also be made from a plastics material, and a diaphragm 7 (shown in dotted outline in Figure 1) for closure of the neck opening of the container 6. The second part 2 is a cover cap which snap fits onto the sleeve 4 in either of
25 two positions (as will be described below). A first position for the cover cap is shown in broken outline and the second position is shown in full block form in Figure 1.

30 An upper portion of sleeve 4 of the closure is formed with a depending flange 8 such that an annular recess 9 is defined within which the rim 10 of the neck 5 of container 6 is resiliently received thereby ensuring a sealing connection between sleeve 4 and neck 5.

35 The upper portion of sleeve 4 is also provided with a concavely formed recess 11 of relatively large width which is developed outwardly to a lower end 12 which is spaced outwardly to a greater extent than the upper end of

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recess 11 at a lip 13. Lip 13 protrudes outwardly around the upper edge of the sleeve 4 and acts as a drip breaker when fluid is poured from the container. A second concave recess 14 is formed in sleeve 4 between recess 11 and an outwardly extending shoulder 15, which shoulder is provided by the upper surface of a lower portion of sleeve 4. Recesses 11 and 14 define first and second sealing positions, respectively, for cover cap 2 as will be described in detail below.

The lower portion of sleeve 4 includes a locking means 16 in the form of an annular member of conical form that is hingedly fixed to sleeve 4 at 17. When the first part 1 of the closure is moulded, and before its assembly on a container, locking means 16 being of conical form depends downwardly and inwardly from the hinge connection 17 (as shown by the dotted outline in Figure 1). Hinge 17 may be provided by a thinner section of the material of the closure.

Neck 5 of container 6 includes an outwardly directed ledge 20 and below that a recessed section 18 defined between an upper inwardly extending ledge 19 (that is an undercut abutment) and a lower outwardly extending shoulder section 21. As the closure is being assembled onto neck 5, member 16 strikes shoulder 20 and is thus rotated about hinge 17 into an upwardly directed position. On further axial movement of the closure onto neck 5 during the assembly operation, locking member 16 rides over ledge 20 and along the neck until it enters recess 18 such that its free end seats under ledge 19 (as shown in full line form in Figure 1). When locking member 16 is seated under ledge 19 the closure is effectively locked in place whereby sleeve 4 cannot be separated from neck 5 without breaking or damaging the locking means 16 or the container 6.

The invention includes use of a locking means other than in the form of an annular member 16. For example, a series of circumferential lugs could be provided which, as will be appreciated, will function in a like

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manner to the annulus 16 to lock the sleeve in place on the container.

5 In the assembled position of the closure on container 6, the bottom facing end surface of sleeve 4 lies directly adjacent shoulder section 21, whereby that surface cannot be readily accessed by a user, thus enhancing the security of a closure on a container.

10 Diaphragm 7 of the closure includes a wall portion 22 of conical form which extends to an upstanding central cylindrical wall portion having a circular top wall 23. Conical portion 22 includes a part circumferential section 24 which is defined by a part circumferential frangible connection 25, the frangible connection being defined by a thin section of the material of the closure
15 that remains consequent upon the forming of a part circumferential groove 26 in wall portion 22. Groove 26 (and consequently frangible connection 25) extends more than 180° from a start position defined by a lug 27 which carries a pull ring 28. Pull ring 28 sits above the upper
20 surface of section 22 and its upper surface lies substantially level with surface 23 of the central cylindrical portion.

Conical wall portion 22 is connected to sleeve 4 by a full circumference frangible connection 29 (which
25 connection is of the same form as frangible connection 25). Thus, a container as sealed by the first part 1 of a closure according to the invention is openable by inserting a finger under pull ring 28 (the diameter of which may approximate the diameter of circumferential connection 29)
30 and lifting it to exert sufficient force to break frangible connections 25 and 29 and continuing to apply sufficient force to ensure that the full circumference connection 29 breaks to thereby detach the diaphragm 7. Diaphragm 7 may subsequently be discarded.

35 The second or cover cap part 2 of the closure includes an internal bead 30 adjacent the lower edge of the cylindrical wall of the cap. It also includes an annular

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wall 31 which depends from the inside surface of the top of the cap and which defines a space for receiving the cylindrical portion 23 of diaphragm 7.

5 The broken-line outline of cover cap 2 in Figure 1 shows the cap in its first or upper sealing position on closure part 1, which is the only position the cap can have when the diaphragm 7 is intact with respect to sleeve 4. In this upper position the shape of diaphragm 7 (specifically wall 23 and lug 27) prevents cover cap 2 from 10 assuming a lower position on the sleeve. A snap fit between the cap and sleeve 11 is established by pushing bead 30 of cap 2 over lip 13 of sleeve 4 until bead 30 seats in recess 11. The connection of diaphragm 7 to recess 11 supplies a sufficient reaction force to the upper 15 portion of sleeve 4 to ensure there is a sufficiently resilient engagement between bead 30 and recess 11 to ensure an engagement between cap 2 and sleeve 4 in its upper position.

20 Upon removal of diaphragm 7, there is no longer any impediment to cover cap 2 being snap-fitted onto sleeve 4 in its second or lower position as defined by the seating of bead 30 within lower recess 14 (as shown in the full line form in Figure 1). Furthermore, the removal of diaphragm 7 removes the reaction force that the diaphragm 25 otherwise supplies for the upper portion of the sleeve 4 to be able to maintain the cap 2 in its upper position on the sleeve. Consequently, upon removal of the diaphragm 7, cover cap 2 cannot be replaced on sleeve 4 in its upper position so as to reseal the container, such resealing 30 being effectual only for the lower position of the cover cap. Likewise, should the frangible connections 25, 29 be partially broken but the diaphragm 7 not removed (as may occur if the closure is subjected to tampering) the cover cap 2 will not relocate in its upper position, and it will 35 thus be readily discoverable that the closure has been tampered with.

Cover cap 2 includes a lug 32 to facilitate its

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removal from its upper position on the closure (which position is illustrated in Figure 3A) for access to pull ring 28 in a normal opening operation. Upon removal of cover cap 2 and then diaphragm 7, cover cap 2 may be snap-fitted onto the closure to reseal the container. When so resealed, the cover cap 2 will be in its second or lower position on the sleeve, as illustrated in Figure 3B. By comparing Figures 3A and 3B, it is readily discernible that the container has been resealed with the cover cap. Thus the cover position provides a visual indication that the seal has been broken and the diaphragm 7 discarded.

A modified form of the Figure 1 closure is illustrated in Figure 8. Note that the same reference numerals have been used to identify corresponding parts in the Figures 1 and 8 embodiments except for the modifications, which are generally indicated by a primed reference numeral. Thus the Figure 8 closure includes a sleeve 4 and a diaphragm 7 having a conical wall portion 22 which extends to an upstanding central cylindrical wall 123. However there is no circular top wall 23 as in the Figure 1 embodiment. Instead, upstanding cylindrical wall 123' extends upwardly from a central circular wall portion 23. Part circumferential section 24 is also modified in that an annular space 100' is included to provide for a depending circular ring on the inside of a cover cap (not shown). Frangible connections 29' and 25' are also formed at the upper surface of diaphragm 7 rather than the lower surface as illustrated in Figure 1. Otherwise the Figure 8 closure is generally the same as that shown in Figure 1. It will be appreciated that Figure 8 shows the closure in its as moulded condition prior to its assembly onto the neck of a container, thus the annular locking member 16 depends downwardly and inwardly from the hinge connection 17.

An example of a closure according to a second aspect of the invention, as illustrated in Figure 4, includes a cup-shaped portion 51 for seating within a neck

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81 of a container 54 for sealing the container and a depending sleeve portion 52 which is frangibly connected to the cup-shaped portion 51 at its upper rim surface as shown at 53.

5 The container 54 for use with the closure includes a flared non-drip pouring rim as defined by a sloping section 55 of the neck. At the lower extremity of section 55, the neck 81 is inwardly and then downwardly directed to define an internal undercut 56, and is then
10 outwardly stepped twice, the second step providing a shoulder 57 having a sharply defined extremity 58.

 An upstanding annular wall 59 of cup-shaped portion 51 and depending sleeve portion 52 define a space for resilient receipt of the neck 81 of container 54. Wall
15 59 includes on its external surface a bead 60 which, in the assembled position of the closure on a container, seats within the internal undercut 56. It will be appreciated that undercut 56 in conjunction with bead 60 provide for a sealing engagement between the closure and a container.

20 Sleeve portion 52 surrounds the neck 81 of the container externally thereof and depends downwardly from frangible connection 53 such that its bottom facing end surface lies directly adjacent the surface of shoulder 57, whereby that bottom facing surface cannot be readily
25 accessed by a user. The sleeve portion, however, includes a lug 61 by means of which the sleeve portion may be levered upwardly to break the frangible connection 53 during a normal opening operation.

 The frangible connection 53 may be constituted by
30 a thin continuous section of the plastics material of the closure. Alternatively, the frangible connection 53 may be formed by a series of thin section bridges of the plastics material. Also preferably the frangible connection 53 does not extend for the full circumference of the closure,
35 rather a small portion of the connection between the cup-shaped portion 51 and the sleeve portion 52 is not made frangible so that the sleeve portion 52 will remain

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connected to the cup-shaped portion 51 and function as a pull ring therefor.

The combination of parts is such that for a normal opening operation or in the case of any unauthorised tampering, the frangible connection 53 will break relatively readily in comparison to, and thus prior to, the seal between the cup-shaped portion 51 and the neck 81 of the closure. Any tampering that may have occurred with the closure will thus be evidenced by the breaking of a portion or all of the frangible connection 53. Thus the seating of bead 60 in undercut 56 provides both a sealing engagement and retention of the closure in position on the container.

A feature of the closure is that the cup-shaped portion 51 includes a concave base wall portion 91. The effect of the concave surface is that when a container is squeezed or an internal pressure is applied to the underside of the base wall portion 91 an outward force is applied against the seal formed by the undercut 56 of the neck 81 and the bead 60 of the cup-shaped portion 51, and this outward force improves the sealing of the closure against the neck.

Figure 7 shows a modification of the closure of Figure 4 wherein the cup-shaped portion 51 includes a rim 62, in the shape of an inverted U in cross section, which extends over the lip of the container neck. Frangible connection 53 is thus spaced a short distance downwardly from the upper surface of the rim of the cup-shaped portion. Otherwise the features of the Figure 7 embodiment are the same as those of the Figure 4 embodiment and have been designated with the same reference numerals. It will be appreciated that the modification shown by Figure 7 allows for the cup-shaped portion to protect the pouring lip of the container when it is used to reseal the container.

Figure 6A illustrates a closure as shown in Figure 7 assembled on a container 54 and Figure 6B shows the same closure that has been tampered with. The

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tampering has caused a break in the frangible connection 53 as is clearly evident from Figure 6B.

Closures according to the invention for use with, for example, 830 ml. milk containers will have a nominal diameter of 38 ml.

The invention as described herein is susceptible to variations, modifications and/or additions other than those specifically described and it is to be understood that the invention includes all such variations, modifications and/or additions which fall within the spirit and scope of the above description.

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CLAIMS

1. A closure of plastics material for a container, the closure including a sleeve for surrounding the neck of the container, the sleeve including a locking means for
5 engaging a portion of the neck of the container, the locking means being hingedly connected to the sleeve, and movable to a locking position which effectively prevents separation of the sleeve from a neck of the container on assembly of the closure to the container.
- 10 2. The closure defined in claim 1 wherein the locking means is movable to the locking position by physical contact between the locking means and a portion of the neck of the container which occurs during the assembly of the closure onto the container.
- 15 3. The closure defined in claim 1 or claim 2 wherein the locking means comprises an annulus having a conical form such that it depends inwardly and downwardly from the sleeve prior to the assembly or fitting of the closure to the container.
- 20 4. The closure defined in claim 1 or claim 2 wherein the locking means comprises a plurality of lugs that depend inwardly and downwardly from the sleeve.
5. The closure according to any one of the preceding claims further comprises a container sealing diaphragm
25 attached to the sleeve by a frangible connection, the diaphragm being removable upon breaking the frangible connection to open the container.
6. The closure according to claim 5 wherein the diaphragm includes a means, such as a pull ring of
30 relatively large diameter, for breaking the frangible connection.
7. The closure defined in any one of the preceding claims further includes a cover cap for snap-on engagement with the sleeve.
- 35 8. The closure defined in claim 7 wherein the sleeve is adapted to provide an upper sealing position and a lower

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sealing position thereon for the snap-on cover cap.

9. The closure defined in claim 8 wherein the diaphragm and the means for breaking the frangible connection are shaped such that, when intact with the sleeve, they allow the snap-on cover cap to engage with the sleeve in the upper sealing position only.

10. The closure defined in claim 9 wherein the container is unsealed, that is when the diaphragm has been removed, the container may be resealed by replacing the cover cap over the sleeve until it snaps into the lower sealing position thereon.

11. The closure defined in any one of the preceding claims wherein the sleeve provides a "no-drip" pouring rim for the container.

12. An assembly of a closure and a container, the closure as defined in any one of the preceding claims, and the container comprising a neck that is adapted to cooperate with the locking means.

13. The assembly defined in claim 12 wherein the container neck includes a ledge which contacts the free end of the annulus or a free end of each lug whereby such contact and the relative linear movement between the closure and the container as they are being assembled rotates the annulus or the lugs about the hinge connection into a locking position.

14. The assembly defined in claim 12 or claim 13 wherein the container neck includes an undercut abutment such that the locking means can extend upwardly from the sleeve after assembly onto the container such that a free end face seats under the abutment so as to prevent separation of the sleeve from the container under normal conditions of use.

15. A closure of plastics material for a container, the closure including a cup-shaped portion for seating within the neck of a container for sealing the container, and a sleeve portion frangibly connected to the cup-shaped portion whereby, when the closure is assembled on the

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container, the sleeve portion surrounds the neck of the container externally of the container and effectively cannot be removed therefrom without breaking the frangible connection.

5 16. The closure defined in claim 15 wherein the cup-shaped portion seals the container by virtue of a snap fit engagement between the cup-shaped portion and the container.

10 17. The closure defined in claim 16 wherein the cup-shaped portion comprises an upstanding wall with a circumferential bead on an external surface thereof which is adapted to engage an internal undercut portion of the neck of a container.

15 18. The closure defined in claim 16 or claim 17 wherein the cup-shaped portion comprises a concave base wall portion.

19. The closure defined in any one of claims 15 to 18 wherein the sleeve portion includes a lug for use in a normal opening operation for the closure as a lever to
20 force the sleeve portion outwardly and upwardly of the container by finger pressure to break the frangible connection and thus allow removal of the cup-shaped portion from the container.

20. The closure defined in any one of claims 15 to 19
25 wherein only a portion of the connection between the cup-shaped portion and sleeve portion is frangible such that the sleeve portion will remain attached to the cup-shaped portion and act as a pull ring therefor to facilitate removal of the sealing cup-shaped portion on opening the
30 container.

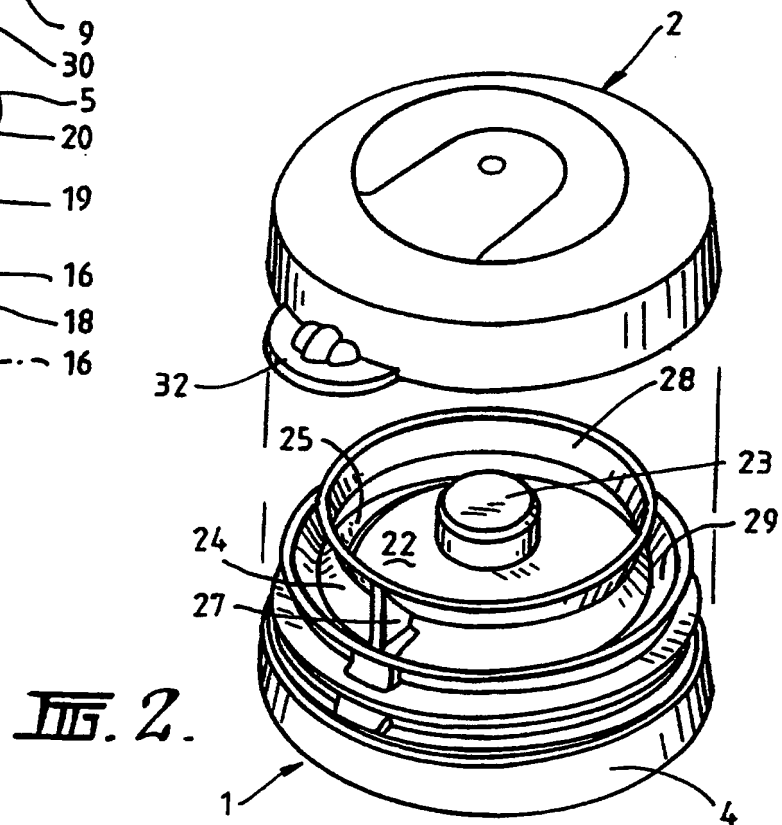
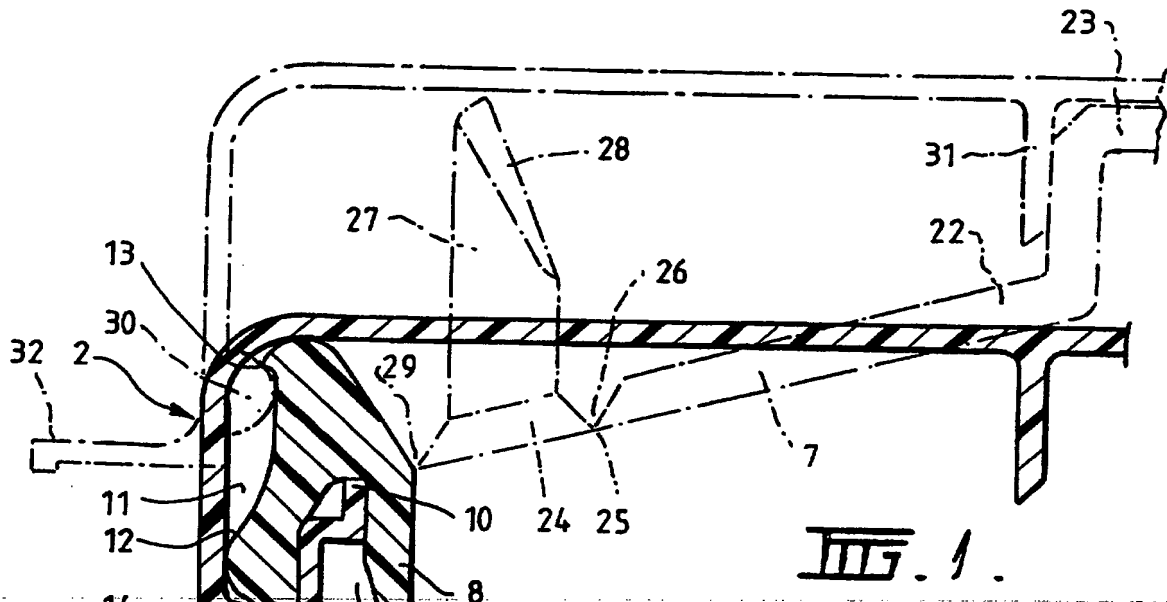
21. The closure defined in any one of claims 15 to 20 wherein the frangible connection between the cup-shaped portion and the sleeve portion is located adjacent an upper rim of the cup-shaped portion.

35 22. The closure defined in any one of claims 15 to 20 wherein the frangible connection between the cup-shaped portion and the sleeve portion is located in proximity to

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an upper rim of the cup-shaped portion but spaced therefrom such that the cup-shaped portion includes an annular rim of inverted U-shape in cross section which seats over the rim of the neck opening of the container.

- 5 23. An assembly of a closure and a container, the closure as defined in any one of claims 15 to 22.



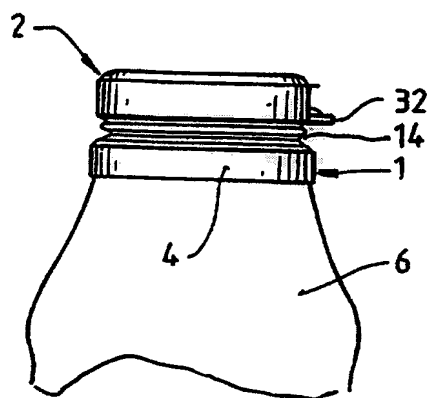


FIG. 3A

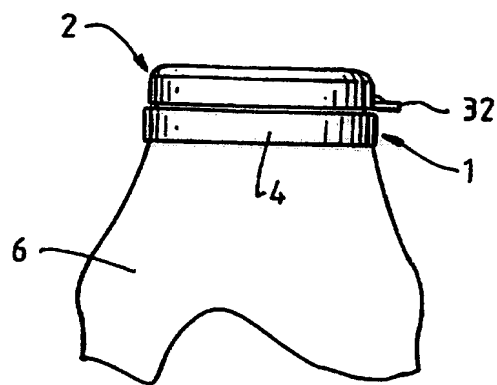


FIG. 3B

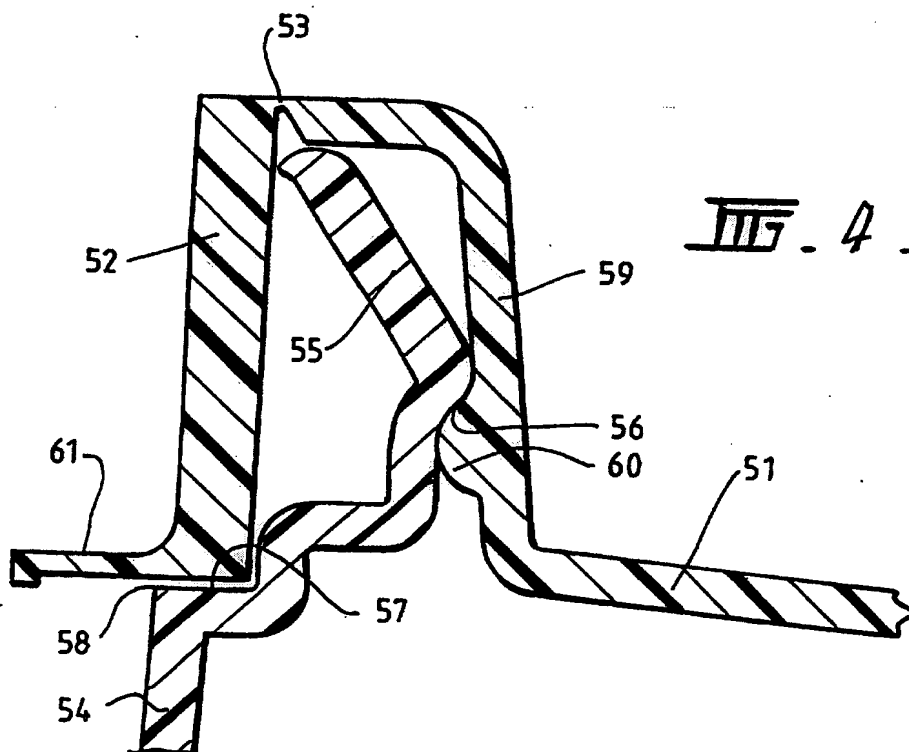


FIG. 4

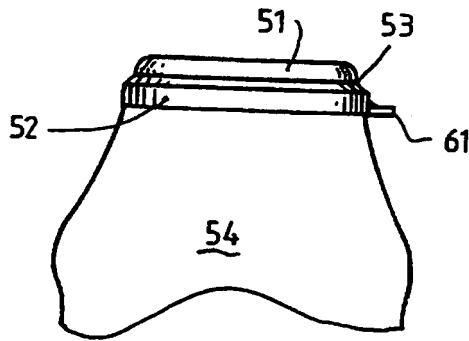


FIG. 6A.

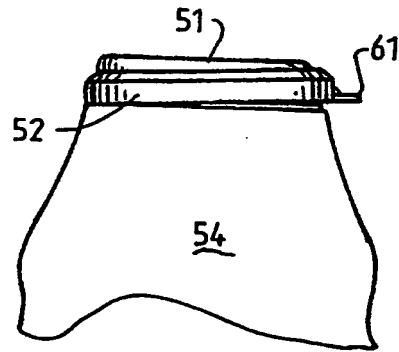


FIG. 6B.

FIG. 5.

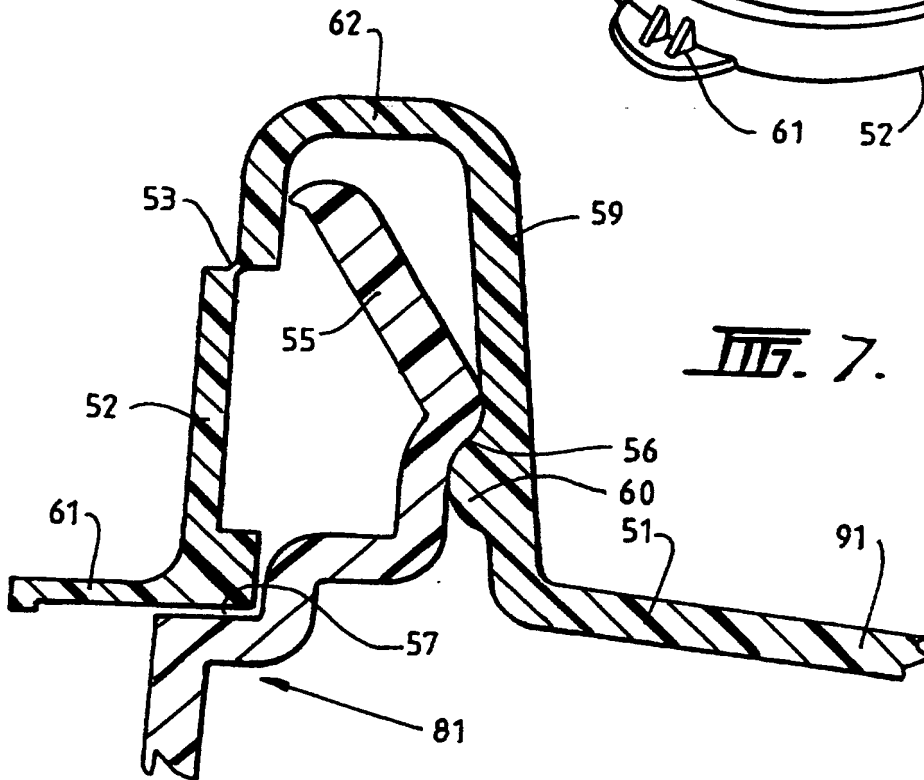
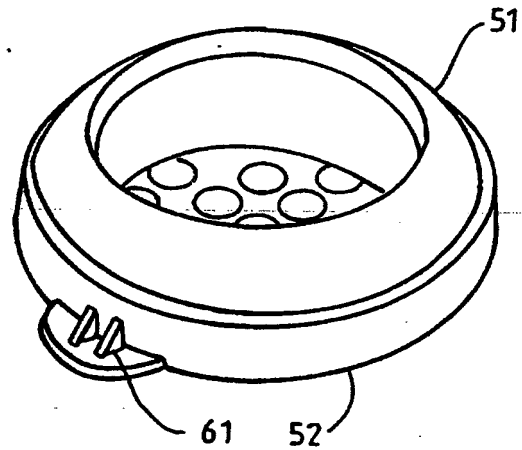


FIG. 7.

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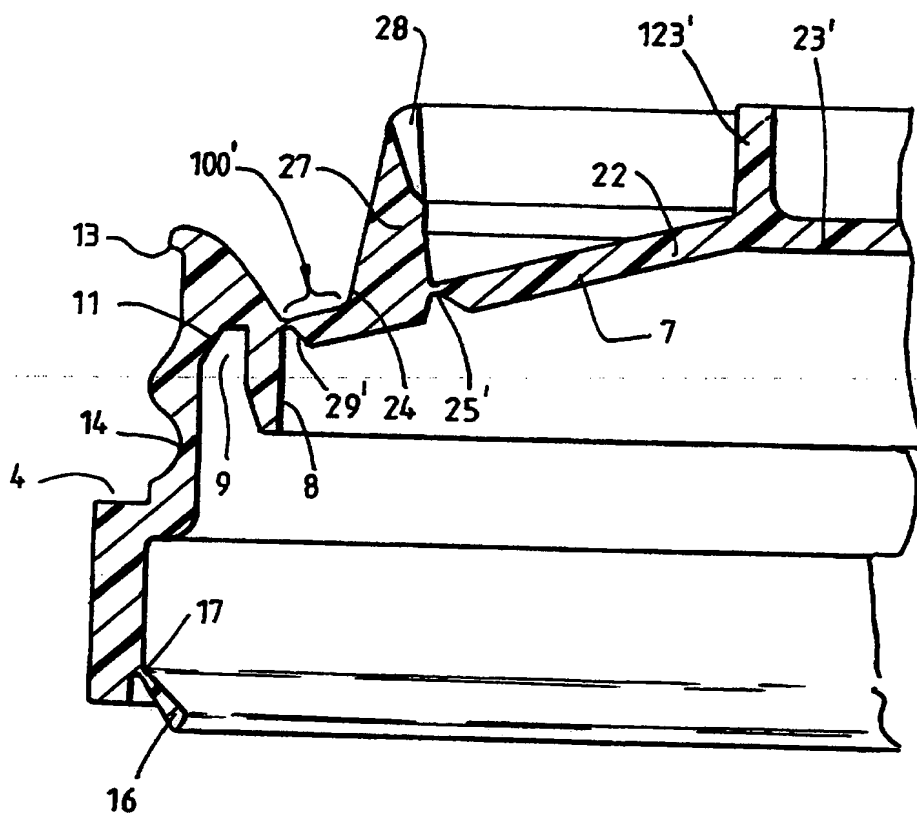


FIG. 8.

INTERNATIONAL SEARCH REPORT

international Application No.
PCT/AU 95/00858

A. CLASSIFICATION OF SUBJECT MATTER

Int Cl⁶: B65D 39/04, 101/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC B65D 39/04, 43/04, 43/08

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
AU: B65D 39/02-06, 41/58-60, 43/0-12

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	AU,A, 31088/77 (510502) (AKERLUND & RAUSINE AB) 7 June 1979 page 7, paragraph 2-page 8, paragraph 3	15, 16, 18, 19, 20, 22, 23 17
X	GB 1352180 (OBRIST, A) 8 May 1974 the whole specification	15-19, 22, 23
X Y	FR 2614875 (NOVEMBAL, S A) 5 May 1987 page 2, line 36-page 3, line 28	15, 16, 18, 21, 23 17

☒ Further documents are listed in the continuation of Box C

☒ See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search
27 March 1996

Date of mailing of the international search report
18 April 1996

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INTERNATIONAL SEARCH REPORT

International Application No.

PCT/AU 95/00858

C (Continuation)

DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P Y,P	AU,A, 77645/94 (CONTAINERS HI-TECH PTY LIMITED) 19 January 1995 page 2, line 33-page 3, line 38, figures 4-6	15, 16, 22, 23 17
X	DE 2911081 (LINCRUSTA, S A) 4 October 1979 the whole document	15, 18, 19, 21, 23
Y		16, 17
Y	FR 2339542 (CARNAUD TOTAL INTERPLASTIC) 27 January 1976 page 2, line 36-page 4, line 13	15, 16, 17, 21, 23

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/AU 95/00858

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

See additional sheet.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 15-23

(as requested by applicant)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet(1)) (July 1992) copbko

Box Continuation of Box II

Claim 1 is directed to a closure having a sleeve, the sleeve having locking means to prevent its removal from the neck of a container. The relationship between the member and the container is considered to be the first technical feature. Dependent Claims 2-4 further characterise the locking means on the sleeve. Dependent Claims 12-14 relate to a container and the sleeve, the container characterised by its relationship to the sleeve, particularly to the locking means. As such it is considered the first search can cover Claims 1-4 and 12-14.

From a preliminary search it was determined that Claim 1 was not novel in light of the following citations:

AU 71046/91 (648537), CONTINENTAL WHITE CAP INC, 10 October 1991 (10.10.91)

AU 50553/90 (615833), ACI AUSTRALIA LTD, 21 June 1990 (21.07.90)

AU 60774/86 (591512), ACI AUSTRALIA LTD, 5 February 1987 (05.02.87)

There exist sets of claims appended to Claim 1 which define different technical features, and as such do not share a special technical relationship. The claims and related features are listed below.

Claims 5 and 6 define the feature of a diaphragm to seal the container top. This is considered to be the second technical feature.

Claims 7 and 8 define a cover cap. This is considered to be the third technical feature.

Claims 9 and 10 define a relationship between the diaphragm and the cover cap. These claims include both the second and third technical features.

Claim 11 defines a "non-drip" pouring rim as part of the sleeve. This is considered to be a fourth technical feature.

With respect to these claims, an additional search is required for Claims 5, 6 and 9, 10 which relate to the diaphragm.

While claims 7, 8 and 11 define additional technical features the searching time for these is minimal.

Claim 15 is directed to a closure having a cup shaped portion and a sleeve frangibly connected to the cup shaped portion. The relationship between the cup shaped portion and the sleeve is considered to be the fifth technical feature. Dependent Claims 16-23 further characterise this feature.

Since the two independent claims (1 and 15) do not share either of the technical features one or five, a technical relationship between these claims does not exist. Therefore an additional search is required for Claims 15-23.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No.
PCT/AU 95/00858

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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